

Comment on: PSC Docket No. 06-241, Delmarva Power Proposed Request for Proposals

To: the Public Service Commission of the State of Delaware

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These comments concern Delmarva Power and Light's draft request for proposals (RFP) for the construction of new generation resources within Delaware.

Lawful selection criteria for the ranking of bids

Section 1007 of Title 26 of the Delaware Code (as amended by Section 6 of HB 6, of the 143rd General Assembly) provides *inter alia* that the RFP "shall ... set forth proposed selection criteria based on the cost-effectiveness of the project in producing energy price stability, reductions in environmental impact, benefits of adopting new and emerging technology, siting feasibility and terms and conditions concerning the sale of energy output from such facilities." Section 1007(d). The sole factors that comprise selection criteria are thus:

1. Energy price stability
2. Reductions in environmental impact
3. Benefits of adopting new and emerging technology
4. Siting feasibility
5. Terms and conditions concerning the sale of energy output from such facilities.

While the Legislature also referred to the "cost-effectiveness" of the project, its use of that term was in reference to meeting those five criteria—as the Legislature noted that cost-effectiveness of a proposed project was to be considered in light of whether it could "produce" certain effects such as energy price stability, reductions in environmental impact," etc. In other words, the Legislature used the term cost-effectiveness to connote a balancing among the various criteria that followed. See also Section 1007(d)(3).

Subsection (d)(1) further provides that the Public Service Commission and the Delaware Energy Office "shall ensure" that the RFP not only "elicit," but that it "recognize the value of" six goals. More specifically proposals are to ensure that the RFP, as approved, recognizes the value of proposals that:

* Disclosure of potential conflict of interest: W. Kempton has worked with Delmarva Power and Light on new technology for distributed storage. This included a small research award from Delmarva in the past, and he is currently proposing another project to be coordinated between UD and Delmarva. None of these projects involve large power generation facilities of the type solicited under this RFP. Both J. Firestone and W. Kempton have a grant from the Delaware Energy Office to examine public support and opposition towards, and regulatory frameworks, related to, offshore wind power. J. Firestone is a Delmarva residential electric customer.

- a. Utilize new or innovative baseload technologies;
- b. Provide long-term environmental benefits to the state;
- c. Have existing fuel and transmission infrastructure;
- d. Promote fuel diversity;
- e. Support or improve reliability; and
- f. Utilize existing brownfield or industrial sites.

The most natural reading of the phrase “recognize the value of” and the direction to the Commission and the Energy Office is that regulators have an obligation to ensure that criteria 1 through 5 identified above are implemented and weighted in such a fashion that the six goals a – f are achieved.

The unlawful use of historic practices in the draft RFP

Unfortunately, rather than follow the Legislature’s mandate, Delmarva appears to have based the draft RFP on historic practices, practices in other states and other provisions of the electricity utility restructuring law that are not applicable here. Most critically, the draft RFP relies on extraneous criteria such as “price” (in addition to price stability) and “environmental compatibility (rather than reductions in environmental impacts) and uses criteria weights that are not based in law. As documented above, it is apparent on its face that price is not a factor under which proposals are to be evaluated under Section 1007(d). Moreover, other portions of Title 26, Chapter 10, that consider cost as a factor are distinguishable and, if anything, bolster the conclusion that price is not an RFP criteria.

Cost is mentioned four other times that are arguably relevant to the question of cost as a criterion in the RFP process. All of these provisions concern the requirement that Delmarva engage in integrated resource planning. Together, the four provisions speak of two needs. First, the general requirement that planning be structured to meet “customers’ needs at minimal cost,” sections 1001(13) and 1007(c)(1), and second, the more specific requirement that Delmarva seek to diversify supply at the “lowest reasonable cost,” sections 1002(4) and 1007(c)(1)(b).

At the August 18, 2006 public workshop, in response to Jeremy Firestone's abbreviated oral presentation of an earlier version of our written comments, a Delmarva representative sought clarification on our position that price was not properly considered under Section 1007(d). The Delmarva representative based his request for clarification on the fact that Section 1007(c)(1) refers to cost. His reference to that IRP provision and Delmarva's failure to give any weight to the second criterion—reductions in environmental impacts—in the draft RFP suggests that Delmarva erroneously based the draft RFP on subsection (c), which concerns the IRP, rather than subsection (d), which concerns the RFP. This is consistent with our analysis here.

To understand why the Legislature included cost as a factor in integrated resource planning but not as an RFP criterion, it is important to recognize the fundamental difference between integrated resource planning and the RFP. First, the integrated resource plan (IRP) is broader than the RFP in that it concerns not only RFPs to obtain long-term power supply contracts, but short-term supply contracts, spot market purchases, self-generation, transmission and demand-side management as well. See sections 1001(13) and 1007(c)(1). The Legislature thus wisely

directed Delmarva to consider cost in its choice among these various options to meet supply. In contrast, the Legislature has already made a determination on how Delmarva can best meet the immediate need for supply—that is, it directed Delmarva to issue an RFP for long-term supply.

Second, the IRP is a long-term planning document that is forward looking; it is to project ten years forward and be revised every two years. In the context of this long-term planning process and document, it is not surprising that the Legislature placed some emphasis on cost. While the RFP will become a part of the initial IRP, the Legislature has already performed the initial planning function for Delmarva. Indeed, “to *immediately* attempt to stabilize the long-term outlook for standard offer supply,” the Legislature directed Delmarva to prepare an RFP by August 1st of this year and for the RFP to be finalized by November 1, 2006. Telling, is the fact that the Legislature did not direct Delmarva to file the IRP until one month after the RFP was to be finalized. Given that the Legislature had already determined that the need for additional supply was so critical that Delmarva was required to issue an immediate RFP, the Legislature cannot be faulted for adopting different criteria to evaluate the RFP from those criteria it thought appropriate to evaluate whether additional new supply would be warranted in the future, and if so, what form that new supply should take (e.g., self generation, spot market purchases, a new RFP for long-term supply).

A closer examination of Section 1007(c)(1)(b) provides evidence of legislative intent not to include price as a criterion in the immediate RFP. As noted previously, that subsection addresses the requirement that Delmarva undertake integrated resource planning and develop an IRP by December 1, 2006 and every other year thereafter. In developing the IRP the Legislature indicated that Delmarva “may” (but, is not required to) consider the “economic and environmental value” of the same six goals that are found in subsection (d) that we addressed above and the first criterion of subsection(d)—price stability. Section 1007(c)(1)(b) also directed Delmarva to “investigate all potential opportunities for a more diverse supply at the lowest reasonable cost.” This latter command directs Delmarva in the context of integrated resource planning to evaluate those options that would diversify its supply (e.g., by “fuel” such as wind and solar energy and by type such as spot market, self-generation, etc.) on the basis of cost.

Section 1007(c)(1)(b) illuminates that when the Legislature wanted Delmarva to consider cost, it certainly knew how—it used language that directed Delmarva to consider cost. One can presume from the fact that the Legislature did not include such language, let alone more narrowly tailored language directed at those proposals that would diversify supply in subsection (d), yet provided considerable overlap in the goals and criteria it specified in subsections (c) and (d), that the Legislature did not intend for price to be considered in the RFP process. While the RFP is “part of the initial IRP process,” Section 1007(d), it is just that, a “part.” And thus, the fact, that cost may be relevant to the larger, longer, more involved and continually revisited IRP process is not material to the question as to its relevancy to the RFP. This is not to suggest that cost plays no role in approval of bid proposals. Indeed, prior to deciding pursuant to 1007(d)(3) whether to approve any proposal submitted in response to the RFP, State officials may consider cost along with other lawful factors in an evaluation of RFP proposals against other alternatives to meet supply requirements such as spot-market purchases and demand-side management.

Moreover, in light of the increases in consumer energy prices for Delmarva customers in 2006 it can hardly be considered unusual for the Legislature to have been more concerned with the long-term stability of prices than it was with the initial price of New Generation power. The problems that the Legislature was reacting to were not due to the failure of the least-cost selection of traditional power planning. Rather, the problems were due to planning that failed to anticipate sources of future price fluctuation, added cost of environmental controls, and other changes. One might surmise that this is precisely why the Legislature provided criteria 1-5, which deliberately did not include price.

In sum, it is not the place of Delmarva, the PSC or the Energy Office to second guess the Legislature and include price as a factor in the RFP process. Moreover, while we have outlined a rational basis on which we surmise this decision was made, in any case, the Legislature is not required to act rationally—it must only act constitutionally. Consequently, the Commission and the Energy Office have no choice but to modify, as provided by law, those elements of the RFP that fail to implement the law, but instead rely on extraneous criteria and inappropriate weights. Anything less, would be arbitrary and capricious, an abuse of discretion, and otherwise not consistent with law.

Specific Recommendations

1. Weighting Criteria

The entirety of proposed RFP sections 2.2, 2.3, 2.4 and 2.5 is inconsistent with the law. It assigns only 20% of the selection weights to “price stability”—the criterion which is the primary consideration of the law. In contrast, it assigns 40% of the weighting to “price,” which is not a criterion specified by the Legislature. The draft RFP gives no weight to “Reduction of environmental impact” which is the second item listed and is emphasized in the text of the legislation second only to price stability. Rather, it gives 7% of the weighting to “environmental compatibility”; no reasonable interpretation of the law would give this factor as low as 7%. Further “compatibility” and much of the text of this section suggests that high weight would be given to compliance with existing rules, whereas the law demands “reduction” in impact and “long term environmental benefits.”

The draft RFP weights the unlawful criterion price twice as much as price stability, almost six times as much as the environmental criterion, and eight times as much as the RFP’s innovative technology criterion. It is worth taking note that two of the first three criteria that are required by the law—reduction in environmental impact and new or emerging technology—are in conflict with low price. For some technologies, price stability and siting feasibility would be in conflict with price as well. Assuming *arguendo* that Legislature had in fact included either a broad price criterion or a more narrowly tailored one applicable only to technologies that would diversify supply, the weight assigned to that criterion would have to be less any individual weight accorded to price stability, reduction in environmental impact or new and emerging technology in light of the general intent of Section 1007(d).

A weighting of the five factors in Section 1007(d), consistent with the emphasis of the text of the law, would be approximately as follows. We suggest the largest weights for the first three criteria, emphasized by the Legislature. For the lattermost two items, we suggest the weights from the Delmarva proposed RFP,

40%	Energy price stability
30%	Reductions in environmental impact
20%	Benefits of adopting new and emerging technology
8%	Siting feasibility
2%	Terms and conditions concerning the sale of energy output

While one could make an argument that the weight assigned to any given criterion should be slightly higher or lower, we believe our proposed weighing reasonable. While Delmarva assigned 60% of the weighting to price and price stability combined, and while we agree with Delmarva that price stability is the most important criterion of those actually listed by the Legislature, we do not feel it appropriate to assign the entire 40 percent from the unlawful criterion—price—to price stability. Our recommended 40% price stability weight falls half way between the 20% price stability weight and the 60% combined price and price stability weight in the draft RFP, and in our view, reflects the importance placed on this criterion by the Legislature and at the same time allows the other important criteria—environmental impact reduction and new and emerging technology—to play an important part in the selection process. The additional six subcriteria of Section 1007(d)(1) would be included within these major criteria of the law.

The draft RFP’s definition of price stability on page 18, “...these factors measure the extent to which Delmarva’s SOS customers are at risk for price fluctuation, and Delmarva shall rank proposals according [to] the magnitude of this risk. Delmarva shall measure stability by the range of the proposed prices from the reference case, and shall” This is a helpful definition for distinguishing price from price stability and interpreting the law’s requirement to evaluate “price stability.” We also address this in “clarifications” below.

A technical factor that results in an inconsistency with the law is the draft RFP’s discounting future capacity and energy costs to their present value in the weighting of bids (pages 9-10, sections 2.3.1 and 2.3.2). That method gives lower weights to electricity prices later in the PPA period and higher weights to prices near the present. This method is in conflict with the most important criterion in the legislation, price stability. Rather than discounting, a method for summarizing prices in multiple years should be used, such as “levelized cost of power,” which allows comparison across bids but does not weight near-term prices higher than latter-year prices.

2. Relationship of CO₂ to Reduction in Environmental Impact and Price Stability Criteria

The law calls for selecting proposals that produce “reductions in environmental impact”, and that “provide long-term environmental benefits to the state” (noted as b. and 2. above). The law did not require only that projects comply with existing environmental laws; it did not require only that projects not increase damage. There is general consensus that the greatest long-term environmental threat is climate change (Scholze 2006; IPCC 2001), and this is a particularly

acute threat for Delaware. However the weighting criteria consider climate change only one fractional component of the 7% weight given to “environmental compatibility”.

For consistency with criterion 2 and subcriterion b above, the final RFP weighting criteria must provide explicit and substantial weight to reduction of greenhouse gases (GHGs). To make the allocated weighting points, two factors are required. To receive full credit, the facility would have to produce electricity without any CO₂ emissions from electric production—to our knowledge, only IGCC with CO₂ separation and sequestration, and renewable energy, meet this criterion. Second, to make the full points for the criterion “reductions in environmental impact”, the New Generation would have to produce electricity at lower incremental (per kWh) cost than existing CO₂-emitting plants. This criterion is necessary because operationally, at times when generation exceeds load, only low per kWh cost New Generation would be dispatched in preference to existing fossil units. To our knowledge, only renewable energy generation would meet this criterion.

In addition to the criteria of Section 1007 of Title 26, two other Delaware commitments are relevant to criterion 2. First, the state of Delaware has recently agreed to comply with RGGI rules to freeze CO₂ emissions, and then reduce them. This agreement will cap emissions of GHGs and eventually reduce to them to 10% below the cap. Second, Delaware’s Renewable Portfolio Standard (RPS) requires that total retail electric sales by Delaware retail electric suppliers include a minimum ten percent of renewable energy by 2019, with the phase-in beginning next year, in 2007. Criterion 2 and subcriterion b should be read *in pari materia* with these actions and thus the allocation of weights should reflect these state policies.

Additionally, in light of the RGGI and given that additional Delaware, regional, national, and/or international fees and restrictions on CO₂ are foreseeable during the lifetime of whatever project is ultimately constructed, and even now, are perhaps required (*Massachusetts v. EPA*, 415 F.3d 50 (D.C. Cir. 2005), *cert. granted*, 126 S. Ct. 2960 (June 26, 2006)), the amount of CO₂ generated by a proposed project is relevant to the first criterion—“energy price stability.” Indeed, given the high level of uncertainty associated with CO₂ the RFP should allocate a significant portion of the 40% assigned to this criterion to the bid for New Generation emitting the lowest levels of CO₂.

3. Quantification of reduction of environmental impact

The draft RFP section on “environmental compatibility” provides a list of positive and negative factors, but does not provide a way of quantitatively comparing environmental impacts. Delmarva’s suggested subjective point scale will not produce scientifically-based weights. To accurately compare bids, environmental impacts must be quantitatively evaluated to the extent possible (including monetization if possible), and contribute to the weighting scale. These quantitative estimates will be imperfect, but without any attempt to estimate them at all, there is no way to compare bids under this criterion.

Additionally, in making these quantitative comparisons, (or qualitative ones when no quantitative measure is possible), including those related to CO₂ emissions, the full facility lifetime impact should be considered, rather than just the PPA period. The RFP is intended to

lead to construction of a facility, and the facility will have an impact, not scaled to the PPA. Signing a shorter duration PPA, or fewer MW in the PPA, does not reduce the potential size of the environmental impact resulting from the facility. Thus, for the purposes of the reduction of environmental impact criterion, environmental effects should be analyzed in terms of percent reduction compared to existing sources of electricity on a per kWh-basis and in terms of total new emissions in Delaware, as the environmental impact analyzed should not be limited to only the fraction of power purchased under the PPA.

Section 2.4.A., “Environmental Compatibility” lists three areas. For these three areas and an additional three we list below, quantitative analysis should be carried out when possible and used to assign points:

Air emissions: For criteria air emissions, three factors should be quantitatively estimated. First, estimates of the health impact of emissions, measured in dollars. Second, annual human morbidity and mortality impacts of emissions should be separately itemized in justifying the points allocated, in addition to being incorporated into the dollar scale. The allocation of points should then be made transparent in the evaluation, for example, “Bid A is capped at 10 points below the maximum points that could be awarded under ‘reductions of environmental impacts’ because it will lead to 4 premature deaths/year, 50 new asthma cases/year, and increase health expenditures by \$20 million/year.” Third, greenhouse gas emissions should also be considered as a factor, as they have severe consequences for Delaware (see example GHG calculation for land area, below).

Land impacts: The RFP is unclear as to whether land impacts of the entire fuel cycle are intended, or only those land impacts upon Delaware. This should be clarified. More important, the most significant land impact on Delaware is not mentioned. That is, because Delaware is one of the most low-lying states, the land impact of CO₂ emissions is inundation of land area. Inundation is well-quantified, and amounts to 6.5 meters of sea level rise from melting Greenland, and 8.1 meters for the West Antarctic ice sheet (Williams and Ferrigno 1999). A commitment to the total of these two (14.6 m) is approximately what is expected from continuing growth in CO₂ emissions through 2065 (\pm 20 years) (Gregory, Huybrechts and Raper 2004), although Greenland is the better modeled, and the ice melt would occur after this century. A simple quantification of this land impact would be to take CO₂ emissions from the New Generation during its life (not just the duration of the RFP), as a fraction of CO₂ emissions of the Delaware electric sector, and apply it as a fraction of the cost of land impact of a 14.6 m (48 ft) rise in sea level, which would inundate about ½ the land area of the state of Delaware. The inundation land impact is critical—it makes no sense to consider the land impacts listed in the RFP but not consider the land impact of inundation, as the latter is thousands of times greater impact than all other land impacts in the draft RFP combined. Thus, inundation must be included in the points allocated for land impacts.

Impacts on wildlife: Wildlife impacts also should be considered. For example, avian and bat collisions with wind turbine rotor blades, towers, and guys are a recognized impact of terrestrial wind facilities (GAO 2005). Some land locations have documented bird fatalities, most notoriously the somewhat unique case of Altamont Pass. Bat fatalities have been recognized as

problematic recently, as turbines have proliferated in Eastern mountain sites (POWIWD-V. 2005). A recent peer reviewed study however suggests that bird impacts might be lower (Deshol & Kahlert 2005) offshore.

Fish are affected by power production as well. For example, fisheries impacts can occur from offshore wind farms through localized changes in the benthic community and through the addition of hard structures that simulate artificial reefs. These impacts have not been assessed at an eco-regional scale, although through the addition of hard structures, local fish species diversity generally increases (<http://njudubon.org/Conservation/PDF/WindEnergySymp05.pdf>). A recent analysis compares offshore wind impacts with the approximately 16 billion fish eggs and larvae killed annually from impingement and entrainment at a specific coal power plant (Jarvis 2005). That coal plant also has been estimated to reduce winter flounder catch by 70-40 metric tons per year (ibid). In addition, other impacts of fossil power sources include the effects of acid precipitation and heavy metal contamination, which although not quantified in the literature, are known to have long-lasting effects on wildlife species, including habitat exclusion, physical impairment, and reduced breeding potential (ibid). Finally, Thomas et al estimate that continued production rates of CO₂ will commit to extinction of approximately 1/4 of terrestrial species by the end of the century (Thomas 2005). The final RFP thus should quantify how points will be awarded under the reductions in environmental impacts criterion related to wildlife impacts; it should award points based on the extent to which a proposal will reduce overall wildlife impacts as compared to other bids, or to the present methods of power generation in Delaware.

For the additional environmental impact areas below, we recommend quantitative analysis to the extent possible but do not make specific recommendations in this comment.

Impacts of emissions on water quality

Water Consumption

Waste Generation

4. Forms

6. In the Draft RFP, Form H is labeled “Environmental Compatibility”. As noted above, it should be titled “Reductions in environmental impact” to be consistent with the law. More importantly, it does not elicit information critical to the evaluation of the bid, as itemized below.

Form H, page 1, “Emission rates” needs to add a row for carbon dioxide in each table.

Form H, page 2, after “capable of CO₂ capture”, add queries:

Will the proposed facility include CO₂ separation and sequestration at time of commissioning? Y/N

If N, are the costs of adding such facilities included in the price of the PPA? Y/N
If N, by what method will the buyer of power be protected from price increases due to carbon taxes or mandated carbon reductions during the PPA?

If Y, What geological stratum has been identified for sequestration of the CO₂, at what location for injection (give surface location boundaries, depth range, and stratum)

If Y, In what form will the CO₂ be injected? (e.g. liquid at ___ °C, ___ pressure).

If Y, what is the total capacity of the geological sequestration area _____ m³, and what is the volume of the CO₂ to be sequestered over the life of the New Generation plant? _____ m³

If Y, what is the approximate half-life of the storage, either to the atmosphere or, for saline aquifers, for liquid interchange with the ocean? _____ years

Provide a description of Bidder's experience in evaluating the geology and economics of CO₂ separation and sequestration.

5. Clarifications and specific wording

2.2.2 Threshold requirements:

P 7 "Environmental", add to the end of the last sentence of this paragraph, "... regulations, including those anticipated during the time period of the PPA."

P 7 "Engineering" add to the three preliminary engineering criteria: "(4) for carbon-dioxide producing facilities, the geological strata expected to be proposed for sequestration of the carbon-dioxide and an initial estimate of the size of those strata in relationship to the total emissions of CO₂ over the expected life of the New Generation facility."

1.4 Location

To be consistent with section 1.5, and so as to not unequally consider different forms of power, add the following at the end of section 1.4: "For New Generation in or on Delaware Bay or the Atlantic Ocean, whether the waters of the State of Delaware or the Waters of the United States, "in Delaware" shall mean that the New Generation's power cables make landfall within the State of Delaware."

1.1 Introduction, page 2, item 2, now reads: "... shall purchase up to 200 MW of capacity, energy and ancillary services". It would be helpful to add a sentence here clarifying that 200 MW of "energy" means average output rather than peak capacity. Thus for a low capacity factor New Generation, this would be adjusted by the capacity factor. For example, offshore Delaware, CF for large wind turbines (3 – 5 MW) is about .4. Thus a 200 MW energy contract would be met by offshore wind generation with 500 MW nameplate capacity.

1.5, page 3, now says "Projects having near-term commencement dates will be viewed more favorably." If it is to be applied to weighting of bids, this should be reflected in one of the

weighting criteria, for example, “siting feasibility” or “terms and conditions”, with specific weights.

Page 18, section 2.5: As noted above, the draft RFP defines price stability: “Delmarva shall measure stability by the range of the proposed prices from the reference case”. However, since the law also encourages new technology, which typically declines in price, and since price stability is of concern only when price increases or fluctuates up and down, full weight in stability should also be granted for bids that offer monotonically declining price. For example, the wind industry has a long term track record of declining costs with installation experience, technology innovations, and higher production. So for a multi-year installation sequence, prices would be expected to decline over that multi-year period. This type of proposal should receive very high points for price stability. That is, even though the price is not “fixed”, if the first year price is fixed and subsequent year prices continually decline, this should not be penalized for lack of stability in price. Although this is clearly the intent of both the law and the draft RFP, it should be stated explicitly and given point allocation.

2.5 Point assignment, page 18, now says “From a price stability perspective, the optimum bid would provide fixed prices with appropriate documentation for the full term of the proposed PPA, ...” Per above, we suggest adding: “... or, for New Generation commissioned over a multi-year period, the optimum bid would give an initial price and insure declining prices in each subsequent year of commissioning.

Respectfully submitted,

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